UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,489	09/17/2002	Travis Robert Glare	24747-1104US	6955

			EXAMINER
35489	7590	02/11/2005	KUBELIK, ANNE R

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ART UNIT	PAPER NUMBER
1638	

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/070,489	GLARE ET AL.
	Examiner	**Art Unit**	
	Anne R. Kubelik	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *15 November 2004*.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-48* is/are pending in the application.
    4a) Of the above claim(s) *15, 17-40 and 44-48* is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-14, 16 and 41-43* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on *17 September 2002* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☒ All   b) ☐ Some * c) ☐ None of:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. _____.
    3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage
        application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *sequence search results*.

DETAILED ACTION

1.   Applicant's election with traverse of Group I (claims 1-14, 16 and 41-43) in the reply

filed on 15 November 2004 is acknowledged.

The traversal is on the grounds that the restriction between groups I and IV should be

withdrawn because the probes and primers of group IV are fragments of the nucleic acid of

group I and because all group members are also nucleic acids; thus, groups I and IV share the

same technical feature and form a single inventive concept (response pg 2). This is not found

persuasive because the nucleic acids of groups I and IV have different nucleotide sequences and

would be different products. Lack of unity practice limits exanimation to one product, one

method of making the product and one method of using the product.

Applicant urges that that the restriction between groups II and III should be withdrawn

because both are drawn to proteins, as the ligand of group III may be a protein; thus, groups II

and III share the same technical feature and form a single inventive concept (response pg 2).

This is not found persuasive because the ligand could be something other than a protein; thus,

groups II and III would not share the same technical feature of being proteins. Furthermore, the

protein of group II and any protein ligand that binds to it would have different amino acid

sequences and would be different products. Lack of unity practice limits examination to one

product, one method of making the product and one method of using the product.

Applicant urges that that none of the references cited in the restriction teach or disclose

SEQ ID NO:1 (response pg 2-3). This is not found persuasive because the claims appear to be

drawn to any nucleic acid with 75% or 50% homology to SEQ ID NO:1 or any fragment thereof

(see objections and rejections below). The cited references teach such nucleic acids.

The requirement is still deemed proper and is therefore made FINAL.

Claims 15, 17-40 and 44-48 are withdrawn from consideration as being drawn to non-

elected inventions.

2.   This application contains sequence disclosures that are encompassed by the definitions

for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However,

this application fails to comply with the requirements of 37 CFR 1.821 through 1.825.

Sequence identifiers are missing from the Brief Descriptions of Figures 4 and 5 and from

pg 22, line 12, and pg 29, line 9.

Full compliance with the sequence rules is required in response to this Office action. A

complete response to this Office action must include both compliance with the sequence rules

and a response to the issues set forth herein. Failure to fully comply with both of these

requirements in the time period set forth in this Office action will be held to be non-responsive.

3.   The specification is objected to because there appears to be two Brief Descriptions of the

Figures, one on pg 16-17 and the other on pg 17-19.

Claim Objections

4.   Claims 2-4 are objected to under 37 CFR 1.75(c), as being of improper dependent form

for failing to further limit the subject matter of a previous claim. Applicant is required to cancel

the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the

claim(s) in independent form. It is unclear in claim 1 what is intended to be claimed, a nucleic

acid of SEQ ID NO:1 or a nucleic acid encoding an insecticidal complex or a fragment or

homolog thereof, or a nucleic acid with 75% homology to SEQ ID NO:1. If what is intended is a

nucleic acid of SEQ ID NO:1, then claims 2-4 are improperly dependent upon claim 1. A

properly dependent claim includes all of the limitations of the parent claim(s), as well as a

further limitation. As SEQ ID NO:1 already comprises bases 1995-18937, 2411-9547, 9589-13883 and 14546-17467 of itself, the claim does not further limit the parent claim. If the intent is to claim a nucleic acid comprising only bases 1995-18937, 2411-9547, 9589-13883 or 14546-17467 of SEQ ID NO:1, then claims 2-4 are improperly dependent for failing to include all of the limitations of the parent claim.

5.   Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In addition to claim 1 being unclear, it is unclear in claim 10 what is intended to be claimed, a nucleic acid encoding an insecticidal complex or a fragment or homolog thereof and capable of hybridizing to the nucleic acid of claim 1, some other nucleic acid that hybridizes to that of SEQ ID NO:1, or a nucleic acid with 50% identity to the listed fragments of SEQ ID NO:1. A claim to a nucleic acid with a nucleic acid with 50% identity to the listed fragments of SEQ ID NO:1 is broader that a claim to a nucleic acid of SEQ ID NO:1 or a nucleic acid with 75% homology to SEQ ID NO:1.

6.   Claims 14, 16 and 41 are objected to because of the following informalities:

In claim 14, there should be no comma after "including" in line 2, and there should be an "and" before pLAFR3 in line 4.

In claim 16, line 1, there is an improper article before "polypeptide".

In claim 41, line 2, there is an improper article before "nucleic".

Claim Rejections - 35 USC § 112

7.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8.   Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Neither the instant specification nor the originally filed claims appear to provide support for the phrase "The purified and isolated nucleic acid of claim 1... *luminescens* toxins". The closest support is on pg 4, lines 1-8, in which the nucleic acid is operably linked to an additional nucleotide sequence, wherein that additional nucleotide sequence encodes the toxins. However, there is no support for SEQ ID NO:1, or any of its parts, being any of the listed toxins, as the current claims appear to state. Thus, such a phrase constitutes NEW MATTER. In response to this rejection, Applicant is required to point to support for the phrase or to cancel the new matter.

9.   Claims 1, 9-14, 16 and 41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are broadly drawn to a multitude of nucleic acids that have 75% or 50% homology to SEQ ID NO:1. In contrast, the specification only describes a coding sequence from *Serratia entomophila* that comprises SEQ ID NO:1. Applicant does not describe other nucleic acids encompassed by the claims, and the structural and functional features that distinguish all such nucleic acids from other nucleic acids are not provided.

Hence, Applicant has not, in fact, described nucleic acids that have 75% or 50%

homology to SEQ ID NO:1 within the full scope of the claims, and the specification fails to

provide an adequate written description of the claimed invention.

Therefore, given the lack of written description in the specification with regard to the

structural and functional characteristics of the claimed compositions, it is not clear that Applicant

was in possession of the claimed genus at the time this application was filed.

See *Univ. of California v. Eli Lilly*, 119 F.3d 1559, 43 USPQ 2d 1398 (Fed. Cir. 1997) at

pg 1406:

> ... A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of
> cDNAs, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural
> features common to the members of the genus, which features constitute a substantial portion of the genus.
> ... the claimed genera of vertebrate and mammal cDNA are not described by the general language of the '525
> patent's written description supported only by the specific nucleotide sequence of rat insulin.

10.   Claims 1, 9-14, 16 and 41 are rejected under 35 U.S.C. 112, first paragraph, because the

specification, while being enabling for a nucleic acid of SEQ ID NO:1, and a method of

expressing SEQ ID NOs:2-4 in *E.coli*, does not reasonably provide enablement for nucleic acids

that have 75% or 50% homology to SEQ ID NO:1, a recombinant expression vector comprising

the nucleic acid, a method of producing the protein encoding by the nucleic acid and a plant,

bacterium, virus or fungus transformed with the nucleic acid. The specification does not enable

any person skilled in the art to which it pertains, or with which it is most nearly connected, to

make and/or use the invention commensurate in scope with these claims.

The claims are broadly drawn to a nucleic acid that has 75% or 50% homology to SEQ

ID NO:1, a recombinant expression vector comprising the nucleic acid, a method of producing

the protein encoding by the nucleic acid and a plant, bacterium, virus or fungus transformed with

the nucleic acid.

The instant specification, however, only provides guidance for determination that a 16.9

kb portion of pADAP has the ability to cause disease in *Costelytra zealandica* larvae (pg 23-25);

sequencing of an almost 19 kb portion, SEQ ID NO:1, of pADAP to show that it has 9 ORFS, 3

of which, SEQ ID NOs: 2-4, have homology to protein components of insecticidal toxins of

Photorhabadus luminescents (pg 26-29); expression of SEQ ID NOs:2-4 in E. coli and

demonstration that they are active against grass grub but not other scarabs (pg 36-38).

The instant specification fails to provide guidance for a nucleic acid that has 75% or 50%

homology to SEQ ID NO:1, a recombinant expression vector comprising the nucleic acid, a

method of producing the protein encoding by the nucleic acid and a plant, bacterium, virus or

fungus transformed with the nucleic acid.

The instant specification fails to provide guidance for exact hybridization or

amplification conditions and probes/primers to use to isolate insecticidal protein-encoding

nucleic acids that hybridize to SEQ ID NO:1, nor does it teach where to find such nucleic acids.

The instant specification fails to teach how to make insecticidal protein-encoding nucleic

acids with 75% or 50% homology to SEQ ID NO:1.

Making substitutions in proteins does not produce predictable results. Lazar et al (1988,

Mol. Cell. Biol. 8:1247-1252) showed that the "conservative" substitution of glutamic acid for

aspartic acid at position 47 reduced biological function of transforming growth factor alpha

while "nonconservative" substitutions with alanine or asparagine had no effect (abstract).

Similarly, Hill et al (1998, Biochem. Biophys. Res. Comm. 244:573-577) teach that when three

histidines that are maintained in ADP-glucose pyrophosphorylase across several species are

substituted with the "nonconservative" amino acid glutamine, there is little effect on enzyme

activity, while the substitution of one of those histidines with the "conservative" amino acid

arginine drastically reduced enzyme activity (see Table 1). All these mutated proteins, however, would have at least 95% identity to the original protein. The nucleic acids encoding all these mutated proteins, however, would hybridize under high stringency to the nucleic acids encoding the original protein.

Given the claim breath, unpredictability, and lack of guidance as discussed above, undue experimentation would have been required by one skilled in the art to develop and evaluate nucleic acids encoding with 75% or 50% identity to SEQ ID NO:1. The insecticidal proteins iencoded by SEQ ID NOs:2-4 are in total 4776 amino acids long. Making all possible single amino acid substitutions in an 4776 amino acid long protein would require making and analyzing 19^{4776} nucleic acids; these proteins would have 99% identity to any one of SEQ ID NOs:2-4. Nucleic acids with 75% or 50% identity to the 18937 nucleotide long SEQ ID NO:1, would have 4734 or 9468 substitutions, respectively; that is they could have substitutions in every amino acid in the protein.

The instant specification fails to provide guidance for which amino acids of SEQ ID NOs:2-4 can be altered and to which other amino acids, and which amino acids must not be changed, to maintain insecticidal activity of the encoded proteins. The specification also fails to provide guidance for which amino acids can be deleted and which regions of the protein can tolerate insertions and still produce a functional enzyme.

Guo et al (2004, Proc. Natl. Acad. Sci. USA 101: 9205-9210) teach that while proteins are fairly tolerant to mutations resulting in single amino acid changes, increasing the number of substitutions additively increases the probability that the protein will be inactivated (pg 9209, right column, paragraph 2). Thus, making and analyzing proteins with any number of amino acid substitutions that also have insecticidal activity would require undue experimentation.

As the specification does not describe the transformation of any plant with a nucleic acid that has 75% or 50% homology to SEQ ID NO:1, undue trial and error experimentation would be required to screen through the myriad of nucleic acids encompassed by the claims and plants transformed therewith, to identify those with resistance to *Costelytra zealandica* larvae, if such plants are even obtainable.

The claims are also drawn to nucleic acids that encode only one of SEQ ID NOs:2-4. The specification teaches that mutations in the coding regions for any one of SEQ ID NOs:2-4 eliminate the disease causing ability of all of SEQ ID NO:1 (pg 25, lines 11-14; Fig. 2c). Thus, none of SEQ ID NO:2-4 alone are sufficient to provide resistance to *Costelytra zealandica* larvae, and a plant transformed with a nucleic acid encoding only one or two would not be resistant. Additionally, nucleic acids encoding only SEQ ID NO:2 (SepA) could not be expressed in bacteria (Hurst et al, 2000, J. Bacteriol. 182:5127-5138; see paragraph spanning pg 5133-5134 and that spanning the columns on pg 5134). Furthermore, the specification does not teach how a use a nucleic acid encoding only one of SEQ ID NOs:2-4.

Given the claim breath, unpredictability in the art, undue experimentation, and lack of guidance in the specification as discussed above, the instant invention is not enabled throughout the full scope of the claims.

11.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12.   Claims 1-14, 16 and 41-43 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter that

Applicant regards as the invention. Dependent claims are included in all rejections.

Claim 1 is indefinite in its recitation of "nucleotide sequence of SEQ ID NO:1" followed

by "that encodes at least one of ... hybridization conditions". It is unclear which is intended to

be claimed, a nucleic acid of SEQ ID NO:1 or a nucleic acid encoding an insecticidal complex or

a fragment or homolog thereof, or a nucleic acid with 75% homology to SEQ ID NO:1. For

purposes of examination, the claim was interpreted to read on all possibilities.

Claims 8 and 42-43 lack antecedent basis for the limitation ""the *Bacillus* ... *luminescens*

toxins".

Claim 9 is indefinite in its recitation of "wherein the nucleic acid may comprise DNA,

cDNA or RNA." It is unclear what else the nucleic acid could be other than DNA, cDNA or

RNA.

Claim 10 is indefinite as words appear to be missing between "molecules" and "said",

and between "thereof" and "capable" in line 2.

Claim 10 lacks antecedent basis for the limitation "the nucleic acid molecules" in line 2.

Claim 10 is indefinite in its recitation of "nucleic acid molecule as claimed in claim 1"

followed by "wherein ... between the sequences". It is unclear which is intended to be claimed,

a nucleic acid encoding an insecticidal complex or a fragment or homolog thereof and capable of

hybridizing to the nucleic acid of claim 1, some other nucleic acid that hybridizes to that of SEQ

ID NO:1, or a nucleic acid with 50% identity to the listed fragments of SEQ ID NO:1. For

purposes of examination, the claim was interpreted to read on all possibilities.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 10 recites the broad recitation 50% identity, and the claim also recites "preferably, 60%, more preferably 70% and most preferably 90-95% or greater identity" which is the narrower statement of the range/limitation.

Claim 14 recites the broad recitation "any suitable natural or artificial plasmid/vector", and the claim also recites "including, pUC 19 ... pLAFR3" which is the narrower statement of the range/limitation.

Claim 12 lacks antecedent basis for the limitation "The recombinant expression vector(s)" in line 1.

Claim 12 is indefinite in its claiming vectors <u>and</u> hosts. Claims should be drawn to only one product. If someone used only one, would be claim be infringed?

Claim 14 is indefinite in its recitation of references within the claim.

Claim 16 lacks antecedent basis for the limitation "said vector as defined above".

Claim Rejections - 35 USC § 102

13.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14.   Claims 1, 9-10, 12-14, 16 and 41 are rejected under 35 U.S.C. 102(e) as being anticipated

by Kramer et al (US Patent 6,281,413, filed February 1998).

Kramer et al teach an isolated DNA encoding an insecticidal complex and with 54.0%

identity to SEQ ID NO:1 (see search results). Kramer et al also teach recombinant expression

vectors comprising the nucleic acid and plants transformed with it (claims 12 and 15-16) and a

method of expressing the proteins encoded by the nucleic acid, wherein the method comprises

transforming a host cells with a vector encoding the nucleic acid and recovering the protein

(column 14, lines 29-61; column 19, lines 29-32; column 26, lines 20-53). The vectors are

selected from any suitable natural or artificial plasmids or vectors.

15.   Claims 1, 9-10 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by

Jarrett et al (WO 98/08388).

Jarrett et al teach an isolated DNA encoding an insecticidal complex and with 53.1%

identity to SEQ ID NO:1 (see search results). Jarrett et al also teach recombinant expression

vectors comprising the nucleic acid (claims 24-26). The vectors are selected from any suitable

natural or artificial plasmids or vectors.

16.   Claims 1-4, 7 and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by

Grkovic et al (1995, Appl. Environ. Microbiol. 61:2218-2223) taken with the evidence of the

instant application.

Grkovic et al teach an isolated DNA, pADAP, from *Serratia entomophila* (Table 1). The

instant specification teaches pADAP comprises SEQ ID NO:1 (pg 23-26 and Table 1). pADAP

comprises bases 2411-9547, 9598-13884 or bases 14546-17476 of SEQ ID NO:1 operatively

linked to additional nucleotide sequences that encode insecticidal proteins, that is the other

insecticidal proteins encoded by SEQ ID NO:1.

17.   Claims 5-6, 8 and 42-43 are free of the prior art, to the extent they read on a nucleic acid

of SEQ ID NO:1 or bases 1995-18937 of SEQ ID NO:1 further comprising another sequence that

encodes an insecticidal protein or bases 2411-9547, 9598-13884 or bases 14546-17476 of SEQ

ID NO:1 operatively linked to nucleotide sequences that encode the insecticidal proteins listed in

claim 8 (keeping in mind the objections and 35 USC 112, 2nd rejections above), given the failure

of the prior art to teach or suggest an isolated nucleic acid of SEQ ID NO:1 or bases 1995-18937

of SEQ ID NO:1 further comprising another sequence that encodes an insecticidal protein.

Conclusion

18.   No claim is allowed.

19.   Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Anne R. Kubelik, whose telephone number is (571) 272-0801.
The examiner can normally be reached Monday through Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, can be reached at (571) 272-0804. The central fax number for official correspondence is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Anne R. Kubelik, Ph.D.
February 2, 2005

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Db 96459 TCACGAGGAGAGTTAAAGCAGGTCAATAACGGTTCAGGAAAT---------------- 96418
                                                                                
Qy 16016 GAAAGCTATCGGTATGATGCGGCGCAGTCAGCGTATTATCAAAAACCGGCACGCGGCAAACT 16075
         ||||||||  |    ||  |||||||||||||||||||||||  ||||  ||||  ||    
Db 96417 GAATGTGACCGATACGGCAGCAACGGAATGAGACAACTGAAAGTGAACAGCAACC 96358

Qy 16076 GGCAACAACGTTCAGACACAGCGGGTAGTGTACCTGCCGGGGCTCGAGTTACGTATCATG 16135
         ||||  ||    ||||||||||||||||||||||||  ||||||||||||           
Db 96357 CAGAATACTACCGCAGCAGCAGCGGCGGCTGTGGATCTCATCTCGCGGGGGTCGCACAACC 96298

Qy 16136 GCAAATGGCGTGACGGAAAAAGAAGCCTGACAGTTATTACGGTGGGGCGGAGGCTGGGCGG 16195
         |||| ||||||||||  |||||||||||||||||||||||||||  |              
Db 96297 CAGAACAGCACCACCAACAACAGAGAGTTACACGTGATCACACTAGTGAAGCGGGGTCGC 96238

Qy 16196 GCACAAGTGCGCGTATTGCACTGGGAGATGCGGCGCAAGCCGGATGACCTCGATGAGGACTCG 16255
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Db 96237 GCACAGGTGCGGGTGCTGCACTGGGACAGCGGTAAACCAGAAGGTATCAACACACAATCAG 16178

Qy 16256 GTGCGTTACAGTTACGATACGATAACCTGGTGGGCAGCCAGCCAGTCTGGAGCTGGACACAGAGAGGT 16315
         |||||||||||||||||||||||| |||||||||||||||||||||||||||||||||||| 
Db 96177 CTACGTTACAGCTACGATAATCTGATCGGTCACCGCTCCAGCCAGCTTGACTGGACACACCAAGG 96118

Qy 16316 TACCTTATCAGTGAGGAGGAGTTCTACCCGTATGGCGAACGGCTGTTCTGACGGCGCGCGA 16375
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Db 96117 CAGATTATTAGTGAGGAAGAGTATTATCCATTCCGGCGGCACACAGCGATGTGGGCAGCCAAT 96058

Qy 16376 AGTGAGGTTGAGCGTGACTACAAAACATATCCGATACTCCAGCAAGGAGAGCGTGACGCGACG 16435
         |||||||||||||||||||||||||||||||  ||||||  ||||||               
Db 96057 AGCCAAACAGAAGCCAACTACATATAAACATATTCGCTATTCAGGCAAAGAACACGGATACCACC 95998

Qy 16436 GGGCTGGATTATTACGGTTATCGGTATTACCAGCCATGGCGCAGGGCGCTGGCTCTCCACG 16495
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Db 95997 GGGCTGTATTATTACGGTTACCGGTATTACCAGCCGCTGGGCGGGCGGCAGATGGTTAAGCGCG 95938

Qy 16496 GACCCGGCCAGGCACGGTGACGGGCTGAACCTGTTCCGACGGTGCGGGAATAATCCCGTC 16555
         |||||||||||||||||||||||||||||  ||||||||||||||||||||||||||||| 
Db 95937 GATCCGGCCAGGAACCATTGATGGCGTGAATCTATACCGAATGGTGGAGAAATAATCCAGTA 95878

Qy 16556 ACGGTGTTTGCACGCAACGG 16575
         ||||||||||||||||||||
Db 95877 AGTTTGCAGGATGAAAATGG 95858
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Qy 97518 GGTGTCCGCCAAGACTATCACTACGAGAGATAACATCCTACCCGGTCGCTTACTTGCTATC 97459
                 ||||              ||||||    ||||||||||||||||||||||||||||
Db 14936 ACCGAGCAGGTTACCGGTGAAGCCGCCCAAATTACGGAACGGTTCGTGTACGCTGGCAAT 14995

Qy 97458 ACCGAACAGGTGCGAGGCAGAA---GAGAAATGACCGAGCCGCCTTATCTGGGCCGGCAAT 97402
         |||   ||||     ||||||||                                       
Db 14996 ACGGATGCCGAGAAGAGATTCTCAATCTGGCTGGCCAGTGTGTCAGTCATTACGATACCGCC 15055

Qy 97401 ACGCCGCAAGAAAAAAGAGTACAACCTTGCGTGCTGGTGTCGTCCGCCACTACGGATACCGCT 97342
         |||                                                            
Db 15056 GGACTGGTGCAGACGGACATCGCCCTGAGCCGCGTGCCGCTTCGCCGTCACGCGGCAG 15115

Qy 97341 GGACTCACTCAACTCAACAGCCTTTCTCTTGGCTCGGCGTCGTGTATCACAAATCTCACAA 97282
                                                                        
Db 15116 TTGCTGCCCCACGCGGCGGGGGCCAACTGGATGGTGGAGGATGCCTCGGCCTGGAATGAC 15175

Qy 97281 CTGCTCGTCGATGATCAAAATGCCGACTGACAGTGAGATCAAAAGGCCTTCTGCAGCAA 97222
                                                                        
Db 15176 CTGCTTGGGATGGGGAGACGTTCTTTCACCCAGCCACCGCTGATCGACCGGCGCCGTCCTG 15235

Qy 97221 AAACTGAGCAGTGATGTCTATACACCCCAAAATAGCACTGATGCCACCGGGGCTTTACTT 97162
                                                                        
Db 15236 AGCATCACCGATGCAAAAGGTAATCTCGACGTGTGGCATATGATGTGGCTGGGCGTGCTA 15295

Qy 97161 ATCCAGACCGATGCCAAAGGCAACATCCAGCGTCTGGCCTATGATGTGAGCCGGGCAGCTA 97102
                                                                        
Db 15296 TCGGGCCAGTTGGTCGCGTGAAGGACGGCACGAGCAGTTCAGGTCATCGTCTGCCTCCCTGACG 15355

Qy 97101 AAAGGCTGTTGGTTAACACTCAAAGTCAAGCCGAACAAGTGATTATCAAATCGCTGACC 97042
                                                                        
Db 15356 TACTCCGCCGCCGGGAAAAAGTGCCGTGAAGAACACGGCAACGGCGTAACCGGTTATCACCGAATAC 15415

Qy 97041 TACTCTGCCGCCCGGACAAAAATTACGTGAAGAGCAACGGGGATTAAAACGGAACGTCCGTCTGGGCAC 96982
                                                                        
Db 15416 ATTTACGAGCCGGAAACACAGCCGCCTGACGGGCTTATTGTATCACTACCCGCGGTCCGTCGAGATACC 15475

Qy 96981 AGCTATGAACCAGAAACCCAACGCGCTTATTGTTCACTACCCGGTAGGCAACGTA 15535
                                                                        
Db 15476 GGTTGCCGGAGCAAAAGTGCTGCGAGGACCTGCGCTATACGTATGACCCGGTAGGCAACGTA 15535

Qy 96921 ------------AAGGTGTTGCAAGACTTACCGGTACTCATAATGATCCGGTAGGCAATGTG 96874
                                                                        
Db 15536 CTCAGCGTCAATAACGATGCGGAAGAAGACACCGCTTCTGGCCTAACCAGAAAGTGGTACCG 15595

Qy 96873 ATCAATATCCGTAACGATGCGGAAGCACCCCGCTTTTGGCGCAATCAGAAAGTGGTCCCG 96814
                                                                        
Db 15596 GAGAATACGTACCATCTACGACAGCCCTGTGTACCAGCGTCAGCGCCACCCAGGGCGCTGAGATG 15655

Qy 96813 GAGAATAGCTATACTTACGACTCCCGTACCAGCTTATCAGTGCTACTGGGCGTGAAAATG 96754
                                                                        
Db 15656 GCCAATGCCGGCGACAGGCGCAACGACTTACCACCGCCCCCTTCCTACAGAC 15715

Qy 96753 GCCAATATAGGTGCAGCAAATAATCAACTGCCCTCCCCTG------CGCTACCTTCCGAC 96700
                                                                        
Db 15716 AGCTCTGCCTCACCACCAATTACACGCGACCTACCGTTATGACCAGTGGTGGCAACCTGACG 15775

Qy 96699 AACATACCTACCAACTAACTATACTCGGCCTACTCGGCCTACAGTTTATGATCACACACTCACG 96640
                                                                        
Db 15776 CAGATGCGCACAGTGCCCCTGCCACGAACAATTATACGACAGCATCACGGTTAGT 15835

Qy 96639 CAAATTCGGCACAGTTCATCGGCTACCCAAAATAACTACACACCACCATCTCG 96580
                                                                        
Db 15836 GACCGGCAGCAATAGGGCGGTACTGAGCACGTTGGCGGAGCTGCCGTCAGATGTTGATATG 15895

Qy 96580 AATCGGAGTAACGCGGCGTTCTGCAGTACGCTGACACCAGATCCAAATCAAGTGGATACG 96520
                                                                        
Db 15895 GACCCGGCAATAGGGCGGTACTGAGCACGTTGGCGGAGCTGCCGTCAGATGTTGATATG 15955

Qy 15955 CCGTCAGTGGAGGAGGTCACCGAGAGCAAGCACCTGGTGTGACG 15955
                                                                        
Db 96460 TTGATGCCGGTGCTGTCACCAAACACCAGTTTATTACCCGTGACACTACGGTCTGGACA 96460

Qy          ...GCGAGGAGGTGAAGGTGCACCCGGTGGTCGTGATGGGGGGCGGGGACGACAGC 16015
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RESULT 6

us-10-070-489a-1.rng

Jan 27 14:55:29 2005

PT animals - contains pesticidal material from Xenorhabdus species
PT optionally synergised with Bacillus thuringiensis toxin.
XX
PS Claim 2; Fig 2; 46pp; English.
XX
CC This is a toxin gene sequence cloned from a Xenorhabdus strain NCIMB
CC 40887. This has insecticidal activity and can be used in an insecticidal
CC composition for oral delivery to an insect. The composition includes
CC material encoded by Xenorhabdus strains NCIMB 40086 and 40887,
CC particularly it contains Xenorhabdus cells or culture supernatant. It may
CC also include active materials from other sources, especially Bacillus
CC thuringiensis or delta-endotoxins, and is formulated with a carrier,
CC especially an edible material for the pest. Pesticidal agents isolated
CC from Xenorhabdus species, especially X. nematophilus have oral activity
CC against Pieris brassicae or rapae, Plutella xylostella and are heat-
CC stable at 55 deg. C. They are resistant to proteolysis by trypsin and
CC proteinase K, and are inactivated by sodium dodecylsulphate or acetone,
CC and by heating to 80 deg. C. The compositions are used to kill Diptera
CC and Lepidoptera, particularly P. brassicae or rapae, P. xylostella and
CC Culex quinquefasciatus, e.g. for crop or animal protection, also for
CC vector control. The isolated pesticidal agent may be expressed in
CC transformed plants to impart protection. Xenorhabdus materials show
CC synergistic effects when formulated with Bacillus thuringiensis toxins
XX
SQ Sequence 38258 BP; 10486 A; 8248 C; 8871 G; 10630 T; 0 U; 23 Other;

Query Match   8.8%;   Score 1658.8;   DB 2;   Length 38258;
Best Local Similarity   53.1%;   Pred. No. 0;
Matches 4978;   Conservative   0;   Mismatches 3802;   Indels 598;   Gaps   44;

Qy 7301 ATGGACTTCTCCGGAGCCAATGCCCCTCTATTTCTGGAGCTGTGTTCTATTACACGCCGATG 7360
           |||| |||| || ||||| ||||||||||||||||||||||||||| ||||||||||||||
Db 10859 ATGGGATTTCAATAGTGCCAGCGCCCCTCTATTACTGGGA-ATGTTCTATTACACCCCGATG 10917

Qy 7361 ATGGTGTTCCAGCGGTTGTTGCGAGAACAGCACTTCCCGGAAGCCACCCGCTGCGCAG 7420
           ||||| ||||||||||||| |||||||| ||||| | | |||||||||||||||||
Db 10918 ATGTGCTTCCAGCGTTTGCTACAGGAAAAACAATTCGACGAAGCCACAATGGATAAAC 10977

Qy 7421 TATGTCTGGAACCCGGCCGGCACGTGGTAAACGGGGTGCTGCAGAATTACACCTGGAAT 7480
           | |||||||||||| || ||||| ||||||| ||| |||||||||||||||||||||
Db 10978 TACGTCTATAATCCCGCGGCTATATCGTTAACGGAGAAATCGCCCCCTGGGATCTGGAAC 11037

Qy 7481 GTCCGTCCCGCTGGAGGAGGAGGACACCCGGCTGGAACGACTCGCCGCTCCATTGACCCC 7540
           ||||||||| ||||||||||| ||||| ||||||||||||||||||||||| |||||||
Db 11038 TGCCGGCCGCTGGAGAG--ACACTCCTGGAATGCCAATCCGGTTGGATGCCAATCCGATCCG 11095

Qy 7541 GATGCAATAGCCCAGTACGACCCCATGCATTACAAGGTGCCACCTTTATGTCGTACCTC 7600
           ||||| |||||||| || | || ||||||||||| | | |||| | |||||||||||
Db 11096 GATGCCGTCGCACAATATGACCGACACTATAAAGTTGCCACCTTTATGTCGGCCTGTTG 11155

Qy 7601 GACCTGCTGATTGCCCGGCGTGATGCCGGCTCGAGCGGGGACACCCTTAAC 7660
           ||| |||| | || ||||||||| |||||||||||| ||| ||||||||||
Db 11156 GATCAACTTATTCTCGCGGCGATATGCCGATATGCGGTTGACCCGATGCGTTGAAT 11215

Qy 7661 GAGGGCCCGGATGTGGTACGTCCAGGCCTCTGGGCGACGAGCCCTATATTCC 7720
           | | ||||||||| | ||||||||| || ||||||| |||| ||||| |||
Db 11216 GAAGCCAAGATGTGGTATGTGCGTCCTTTGGAATTGCGTGCTGGAGGAGATTAC 11275

Qy 7721 TTTGACGCCGACTGGTCGGCGTTGACCCTGGGTGACGCAGCCAGCGACGACGCGC 7780
           ||| ||| || |||||||| ||||||| | || || ||||||| |||| || ||
Db 11276 GGCAGCCAACAGTGGCGTCGCACCGGCCACCGGTGGCGGCGGCGACCACCACTGTGCAAGCG 11335

Qy 7781 GATTACCAGGAGGCCCTGCTGCCCGGTTCGCCGGCCGCTGGCTGCGGGCGACG 7840
           |||| ||| |||| || |||| |||||||| ||||| | || ||||| |
Db 11336 GGCTATCAACAGAGACCTTACGGCCGCTAGACAACGGAGAAGGTTGCACTCAACCCCGCAAC 11395

Qy 7841 GCGAATTCCCTGACGGCACTGTTCCTCCCGCAGCAGAACGAGGTGCTCAAAGGCTACTGG 7900
           || || ||||| |||||| ||| ||||||| | ||||| |||||||| | |||||||||
Db 11396 GCTAACTTCGTTGGTGG-TTTGGTCCTCGCCGGAATATAACCCGGAATCAACCGATTACTGG 11454

Qy 7901 CAAACCTTGGCACAGCGGCGGCTCCATAACCTCGGCCCACAACCTCTCCATTGACGGACCCAGCCG 7960
           |||| |||||||| ||| |||| |||| |||| | || |||||||||| ||||||||||||||
Db 11455 CAAACC-TGCGTTTGCGCGTTCGGTTAACCTGCGCCATAAATCCTTCCA-TGACGGCAACCCG 11512

(right column alignment blocks)

Qy 7961 CTTTCCCTGCGTCCTCTACGCCACGCGCTCCGCCCTGCCGCACCGTCCGCCCTGGCCGTCGTC 8020
Db 11513 TTATCGCTGCTGGCGAATTACGCGACGCC--TACGATCGGAAAGCGCTGCTCACCAGTATGGTA 11570

Qy 8021 AACAGCGCCAGGGGTGCTGCAGCACTGCGCGCCGGTGATGCGCGTGATGGCGCTTTACAGTTCCCG 8080
Db 11571 CAGCCTTCTCAGGGCGGTAGTGCAGCGGTAGTGCTGCCCGGACACATTGTCGTTATACCGCTTCCCG 11630

Qy 8081 GTCATGCTGGAGAACGCCCCGGGGGATGGTGAGCGTCTGCTGACCGGGTTCGGCAACCACACTG 8140
Db 11631 GTGATGCTGGAGCGGCGCCCGCAATCTGGTAGCGCAATTAACCCAGTTCGGCCACCTTCTCTG 11690

Qy 8141 CTCCGGTATTACCGAGCGTCAGGATGCGGAGGATGCGGAGGGGCGGCTGGCCAAACTGCTGCAGACCCAGGGC 8200
Db 11691 CTCAGTATGGCAGGCAGCGATGATGCCGGATGCCGGTAGTGCTGCTCGAGGAAATGCGATGCG 11750

Qy 8201 AGTGAACTGATACGCCCAGGGCCTTCGCCAGCAGGATAACGTCCTCGAGGAAATCGATGCGG 8260
Db 11751 ATGGAACTGGCGACACAGAGCATCTCGTATTCAGCAACGAACGAACTGTCCGATGAAGTGGATGCT 11810

Qy 8261 GATATTGCCGCCCTGGAGGAGGAGCGCCCGCAGTGCACAAATCGTCTGGGAAAAATACCAAA 8320
Db 11811 GATATTGCTGTATTGGCAGGAGCGGCGCCCGCAGTGCACAAAATCGTCTGGGAAAATACCAG 11870

Qy 8321 GTGTTGTACGGAGGCGGAGCGTCAACACCGGCGAAAAACAGGCCATGGACTTGTACCTCAGT 8380
Db 11871 CAGCTGTATGACGAGGATATCAACCAGCGAGGATCAGCGGTGCGATGTCACTGTTTGATGCG 11930

Qy 8381 TCGTCCGTGCTGTCGGCATCAACCGGCCGCGCTCTTTTTGGCGGAGGCCGGGCCCGATATG 8440
Db 11931 GCGGGCAGGTCAGTCTGCGGCCCTTCGGCAGGGCGGCGCTTCAGTAGCAGAAGGGGGTGGCGCACTTA 11990

Qy 8441 CTGCCCAATATTACGGCTGGAACACAGCCACCTTCCCGGCTGCTGCAGG 8500
Db 11991 GTTCCAAACGTGTTCGGTTTCGGTGTTGTGGTTGCGTTGTGTGGGGGGCAGTCGTTGTGGGGGCAGTCGCTGCTGT 12050

Qy 8501 ACCGCCATGCCATCCAGGTGTCCAGGTGTCTGCAGAATTACACCTGGAAT 8560
Db 12051 TCCCGCCTCCGTGATGTCGCTTTCTTGCCACAGCTTCCACTCCAATATTCCGCAGACAAATCAGC 12110

Qy 8561 CAGTCGGAAGTGTACCGCCGTCGCCGCGCCGTCAGGAGTGGGAAATCCAGCGTGACGTGAGTGCGCAG 8620
Db 12111 CGTTCGGAAGCCTACCGCCGTCGCCGCGCCGTCAGGAGTGGGAAATTCAGCGTGATAATGCTGAC 12170

Qy 8621 TCTGACGTGCGCAGATTGATGCCGCAGCGTGGCCGGCCATGGCAGTGCGCCGGGAGGGGCT 8680
Db 12171 GGTGAAGTCAAACAAATGGATGCCCAGCTGGAAAACGCCTGGAAAAATACGCGCGAAGCAGCA 12230

Qy 8681 GAGCGCCAGAAAACTTACCTGACGCCGCTGCTCGAGCGGGACACCCTTAAC 8740
Db 12231 CAGATGCAGGTGGAAATATCAGGAGACCCAGCGCCCATACTACTCCAGTTGAGCTG 12290

Qy 8741 CTGCAGAGTAAGTTCAACAATACGGCTCTCTACACGGTGCTGCGGCCAGTGTTCGCGC 8800
Db 12291 TTACAGCGTAAATTCACAAACAAAGCGCTTTACAGTTGGATGCGGCCAAGCTGGAGTGCT 12350

Qy 8801 ATTTATTACCAGTTCTATGACCTGCAGTATCCCGGCTGCTGATTGGCCGCTGGG 8860
Db 12351 ATCTATTACCAGTTCTTTGACCTGACCCAGTCCTTCCTGTCGTTGATGGCCGCTG 12410

Qy 8861 CAGTGGGATAAATTCGAGA---CTAGGTCGTTTATCCGAGGCCGGGCCTGGATGGGGGCA 8917
Db 12411 CGCCGGAGCTGACCGACAACGGGTTTGTTACCTTTATCCGGGCGGTGGGAACGGTACG 12470

Qy 8918 AATGCGGTTGCTGCCGGCGATGGAATCTGATCTGGCCGAGATGGAGCAGGCC 8977
Db 12471 ACTGGCGGTTTGATGCGGTGAAACGTTGCTGCTGAAATGGAAAAAGTC 12530

Qy 8978 TGGCTGACCGGGGATGAGCGGCAATAGAGGTGACGGCGAATAGAGGTCGTCGCCTGTCCGGAGGTC 9037
Db 12531 TGGCTGGAGCGTGATGAGGCTCGACTGGAAGTGACCGTACCGTCGTTGGCACAGTTC 12590

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Qy    14745 TTAGCGCTTATCGGGCAACAAATAGTGTACGTGTCTGGTCAAATAATCCGGCAGGATGGAT 14804
Qy    11218 AAAGGGAGACCGTGCAGCAAACGAAGAGACTCACTCGTCCGCGTCCGCGGGGGTTGACCCA 11277
Db    14805 CGCGCGCTCAGGATGATGTTATTCATTTGTCAAATAAGCCACTGCCGGTTCCGGCAAAATAAG 14864
Qy    11278 CGTACCCTCGTGGCGTTCAGTGATATGGCTGCAGTGACAGCAGCATTTGACAGGAGGTG 11337
Db    14865 CGTCATCTTGTCGCATTCAGTGATATGCGCCGGCAATCACATCTGGTGGAAGTT 14924
Qy    11338 CGTGCTAATGAGTACGTACGTTACTGGCCAAACCTGGGCACGGTCGTTCGGTCAGCCGGTG 11397
Db    14925 ACGGCAAATAGCGTGCGCTACTCGGCCAACCTGGGCATGGAAAATTTGGTGAGCCTCTG 14984
Qy    11398 AATATTCCCGGTTTAGCCAGTACGTTTAACCCTGACCAGATATTGCTGGCC 11457
Db    14985 ATGATAACAGG-CTTCCAAATTACCGGGAAACGTTTAACCCCCACAGACTGTATATGGTA 15043
Qy    11458 GATACCGACGGTTCCGGTACCA-CGGACCTGATTTTATGCGATGAGTGACCGGTTAGTCAT 11516
Db    15044 GACCTAAATGCTCAGGCACCACCACCCGATTTTATTTATTTATGCCCGGCAATACCTTGAACT 15103
Qy    11517 TTATTTCAACCAGAGTGGTAATTATTTCGCCGAGCCGCATACGCTGCTCTTGCCGAAAGG 11576
Db    15104 CTATGCCAATGAAAGCGGCAATCATTCTCTGCTGGTGCTAATAGCGATAACCTGAGCCGGATGG 15163
Qy    11577 TGTGCGCTATGATCGCACCTGCACCTGCAAGTGCGAAGATATCCAGGGGGTGGGGGTGCC 11636
Db    15164 GGTACGTTTTGATGATACTTGTCGGTTACAAATAGCGATAACACCAAGGATTAGGGACTGC 15223
Qy    11637 TAGCCTGTTACTGACGGTCCCCCATGTCGCGCGCTCATCACTGGGGTGTGCCATTTATCGGC 11696
Db    15224 CAGCATTATTTTGACGATCCCCCATATGAAGGTGCAGCAGTGCGATTGGATATGACCAT 15283
Qy    11697 AGACAAACCCGTGGTTGTTGAATGGCATGAACAACAATATGGGGCGCCCGCATGCACTGCA 11756
Db    15284 ATTCAAGCCTTGCTGCGTCTGGTCAGCGCAGCGTTTATCGCGAGGGAACAGAAAACCACGTGTA 15343
Qy    11757 CTATCGCAGTTCGGTGCAGTTCCGTGCGGATGAGAAAGCCCACTGGCCGCACGGCAG 11816
Db    15344 TTATCGCAGCTGGTAACCGAGCTTCTCTGGCTGGATGAGAAATTACAGGGCTTCTGAATCCGGGAT 15403
Qy    11817 TTCCCCCTGCCTGCTCACCTGCTACCATTTACATTGCATACCCGTGTCGGCGTTCGGCAGGA 11876
Db    15404 GACGGTGTGCAGTCAGCTACTTACCGTTCCCGGTGTCATGTGTGCGGCACGGAAGTGCTGGA 15463
Qy    11877 TGAGATCACCCGGTAACCGTCTGGTCAGCGACGTGCTTTATCGCACCACGGCGCTCTGGGACCGG 11936
Db    15464 TGAAATTTCCGGTAACCGATTGACCAGCCATTATCATTACTACAGCGATGGTGCCTGGATGG 15523
Qy    11937 GCAGGAACGCGAGTTCGGGGGTTTGGGGGTTTTGTTTGGTTTCATTACATTGCATACAGG 11996
Db    15524 TCTCGGAACGGGGAGTTTCGTGGTTTTTGGGCGGGGTGACGCAAACTGATATTGATTCACCGGAC 15583
Qy    11997 AAG------CCAGGGTACGGCGACGGAACTGAGTATGCCTTTCTGTGAGCCGGAACTGGTA 12050
Db    15584 GAGTGCGACACAGGGGACACATGCTGAACCGCACCTTCCGGATAGGCCTTTAATTGGTA 15643
Qy    12051 TGCCACCCGGGTACCGGCAGTAGACGAGCGTCTGCCGGAGACGTATTGGCAAAACGATGC 12110
Db    15644 CGGCACTGGCTACGGGGAAGTCGATATTCTTCTGCCCACGGAATATTGGCAGCGGGGATCA 15703
Qy    12111 CGCCGCTTTTGCCGACCGGTTCAC------TGTCGGTTCAGGAGGAGGATGA 12164
Db    15704 ACAGGCATTTCCCCATTTTACCCCCACGCTTTACCCGGTTATGACCGAAAAATCCCGGTGTA 15763
Qy    12165 GCAGACATATACTCCCGGACGACGAAGACAATTCTGGTTGCAGCGACCCTGAAAGGCAT 12224
Db    15764 TATGACCGGTCACCGCGAGCGGCGAGCGGAGAATCTGGTTACATCGGCGTTTAAAGGACA 15823
Qy    12225 CCTGCTTACGCAGTGAGCTTAATCGGTGCCGATGGCAGCAGCGCAGGGCCGATATCCCTTTACAG 12284
Db    15824 ACGTTTACGCAGTGAGCTGTGATCGGGGGGATGATCGATTCTATACTGGTCAGGGTTATTC 15883
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Qy    12285 CGTCACTGAGTCTCGCCCGCCAGGTACGGCGCTAGTGTTGAAGCGAATGGA---GACTACCCGGT 12341
Db    15884 AGTGGATGAATCCCGACCCAAGTACGTTTGTTCACCGGTGATGGTATCGGACGGTGCGCTGC 15943
Qy    12342 GGTGTCGCCGATGGCGCGGAAAGCCTCGGATGGCCGAATCCCGCCAATACCGGTCAGTTGAAGGTG 12400
Db    15944 GGTACTGGTTTCGGTGCGGTGGCCAATATGAAGGGGTTGTTACCGATTC 16003
Qy    12401 CTCAATGCCAACAGCAGCGGCGTACTCCTCAGTGATGAATACGGTTTCCCACTGGTGCTCAGG 12460
Db    16004 CACAGTGCAGCCAAAAGATTGTCCTTAAATATGATGGCGTTAGGATTTCCGCAGGACAAATC 16063
Qy    12461 TCAGTGTCAATTATCCACGACGCCCTCCGTCCGTCGGCGGACAATCCATATCCGGCGTCCTTAC 12520
Db    16064 TTGAGATTGCCTATTCGACGCGTCCACAGCCTGAGTTCTCGCCTTATCCGGATACCCCTGC 16123
Qy    12521 CGGCGACGCGTGTTGCGCCAACAGTTATGACGAGCAGCAGAGCAGATATTACCGCTGGGGTTGC 12580
Db    16124 CCGAAACACTTTTCTTCACCCAGCAGTTTCGACGAACAGCAGCAGCAGATGTTCCTTCGTTCT---GACAC 16180
Qy    12581 AACAGAGCAGTGCACATCACCTTGTTTCACTGTCTGGGGACAACGTGCCGGAAGGGGGTC 12640
Db    16181 GCCAGCGTTTTCTTATCACCATCTGAATCATGATGATAATATACGTGGATCACAGGGCTTA 16240
Qy    12641 CGGAGGCGTCGGCGGACGAGTGATTATTCACGTACTCTGCGGGACCGGCCGAACGTGCCGGAAGGGGTC 12700
Db    16241 TGGATAACCTCACGCAGTGACGCGACGTATTTATCAAGCCGATAAAGTGCCGGACGTGGAT 16300
Qy    12701 TGACGCTTGGAACACCTGTTGGGCGCCCGAAAGCTGGTTCTCGGATAGTCGGTACGC 12760
Db    16301 TTTCCCTTGAATGGTTTTCTGC--------CACAGGTGCAGGGAGCAGTTGTTGTTGCCTG 16351
Qy    12761 TGGCGGGTCAGCGACGCAAGTCTGGTATCTGGGATTCACAGAGCGTTGCCACCGTGCTGCTC 12820
Db    16352 ATGCCCGGACATGATACTCGGGACAGCATCAGCGGTGTAGCATATACCGGTCCAGAAGAGCAAC 16411
Qy    12821 CGCCCACTCCCCCCCAAGGTAGCTTTTATCGAAACGGCCGTGCTGATGAGGGTATGGTCA 12880
Db    16412 CCGCTATTCCTCCGCGTGGTGGCGCATACATTGAAACCCGAGAGTTTGATGAACGAGTCGTTGG 16471
Qy    12881 GTTCACTGCGTGCCTACATTGTGA--------TGAAACATCTCGAGCAAGCCGGTTACCG 12932
Db    16472 CGGCTTTTGAGGAGGTGATGAGAATGCAGGAGCTGACAAAAACAGCTGAATGATGCGGGGCT 16531
Qy    12933 GCAATCCGGATACCTTTTCCCTCGAGGCGAGCAGGAAGCAGAACAGGCCAGTGTGGACCCAGTG 12992
Db    16532 GGAATAACGGCGAAAAGTGCCGTTCAGTGAAAGA--CAGATTTCCATGCTCTGGGGTGGGGACA 16589
Qy    12993 TCAGGGATATGTTTACCTATGCCGGTCAGTCCAGTGTGATAATCTGCACTCTCGGATGCTCTGGGGCG 13052
Db    16590 AAAGGAATTTTACAGAAATATGCCGGTGCAGACGACGGATTCTATCGGCGCATGGCACGGGA 16649
Qy    13053 CAGTATGTTGACCGGCCAGTTACCGTGCAGCCGTGACGCTGGCGTCATCGCA 13112
Db    16650 AACCAAGCTTACAGGTCAAACGGTCAAACGACCAGTGCTGGGATAGCCATTACTGGTTATCACCCGC 16709
Qy    13113 GTGGCAGGATGCGCGCAGGGATTGTCACCACGGCGCGCTTCGTGACGCC 13172
Db    16710 AACAGAGGGATTGCCGCGCTGCCTGCCTCGCTATGTCAAGGCCATTACGCGTTACGATTGTTGGTTGC 16769
Qy    13173 CGTCCGGGGTGACGGTGACGGCGGACGGATTGTCACTCCTCACTCTCGATGCTTCTGGGGCCGG 13232
Db    16770 GGATAACACCACCAGATATCAATGATAAACTATTCAACAAGGATATACCCCTGC 16829
Qy    13233 GGTGACCACCCTGCGATTCTCGGGCCACGGAGAATGCAGTTATTGGTCACCGTTACAGTGATGC 13292
Db    16830 GGTAACCAGCTTCCGGTTTCTCGGGGGACTGAGCCAGCGCCAGCGGGGAC 16889
Qy    13293 CACGTTGTCCGTTCCGACGGCGCAGCCCGATATCCCTTACAG 13352
Db    16890 G--------GAAAATGAAACTGTCCCGTTTATTGTCCCCACAACGGT 16928
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Qy 13353 AGCACAGTGTCTGGTGTATGTCACGGACAGTGGGGAGGATGACGACAATGAGAAATGCC 13412
          |||||
Db 16929 GGATGATGCTTCTGGACATTGGGCCATTCCGGGCATACCTGTTGCAGGGTGATGGTTTATGCCCC 16988

Qy 13413 CCCCGCACGTGGTCGTGCTGCTACCGATCGCTATGACAGTGACAGTCGATACCGGACAGCAGGTCCG 13472
          ||||
Db 16989 TCTGGAGCTCGGATGGTTCAGGCCAGCTTTCTCTAATGATGGGGAGCTTTATGGGAGCTGAA 17048

Qy 13473 CCAACAGGTGACATTCAGTGACGGTTTTGGGCGTGAGTGCAATCGGCAACCCGGCAGGC 13532
          ||| |||||
Db 17049 ACCGGCTGGGGATCATCACTGAAGAT 17073

Qy 13533 CGAGGGCAACGCCTGCAACAGAGGACGCGACAAACTGGTGACGGCCAGTGACGCGGATT 13592
Db 17074 17073

Qy 13593 GCCGGTCACTGTGAGCAACGAATTTCCGCTGGGCCGTCACCGGGAGGGGCGGAGTATGACAA 13652
          ||| ||
Db 17074 GTTATCAATATGATGCTCAAGGATCTCTGACTCAGAGTATTGATCCGGCATTTTATGAAC 17114

Qy 13653 TAAAGGTCTGCCTGTTGCGGGTTTATCAGCCGTATTTTCTGGACAGTTGGCAATATGTCAG 13712
          ||| |||||
Db 17115 TAACCCTGCCGGCTGCCAAAGCAAGTCAATTCACAGAACCCACCCCATGTACTGAG 17174

Qy 13713 TGATGACAGTGCCCGCCAGGACCTGTATGCCGACACGCACTTTTACGATCCGACGGGCACG 13772
          |||
Db 17175 TGTGATCACCGACCGGCTATGATGCCGATCCGGAACAACA 17213

Qy 13773 GGAAATGGCAGGTTATTACGGCCAAAAGGTGAACGGCGACAGGTGCTGTATACCCCGTGGTT 13832
          ||| |||||
Db 17214 ATTACGTCAAAACGTTTA 17230

Qy 13833 TGTGGTTCAGTGAAGAACGACGAGAATGATGACCGTTGGCTAAACGACCGATCCTGACTGGGAG 13892
Db 17231 CGTTTAGTGATGGTTTTGGGCGAAACCTTACAAACAGCC 17270

Qy 13893 GAGGGGGGACGGTGATGAGTCCGTGCGCCCTGACAGGCCGCTGCCCTGATGGAGACAAAG 13952
          ||| |||||
Db 17271 TACGCCATGAAAGTGGTGAAGCCTGGTACCTGGGTGGTACCGGTGTTGTGCCAATGTGGCTGAAA 17330

Qy 13953 ATGAAAAATACAACTATCAGGTTGTGCGCGGTTGTGCTGACAGGTGTTATGGTTTGGGGGCTT 14012
          ||| |||||
Db 17331 ATCAAGGCGCC 17341

Qy 14013 TCCCATTGGCGTTACACCGTCGGTTACACGCGGCGAGATACTCAATGGCAACACGCCAG 14072
          ||||||
Db 17342 CCTGAAACGGGGCGATTACAAATTTCCGTTGGGCAATTTCCGGACG---T 17389

Qy 14073 GCCGAACAGGAGAAAGGCGCCGATGCGTTGGCCCTCCTGGCAGCAGAAACCCGGGAAAGAAAG 14132
          |||||
Db 17390 ACAGAATAATTAACGGAAAGGCAAAGCCCCCTGGGTTACGTTCAA 17435

Qy 14133 TGGGAGCAGCAACGACAGACAGATGAACAAGGTGGCTATACATGCTGAAGAAGAGAACTG 14192
          |||
Db 17436 ----ACCGTATTCCTGAAATAATTTGGGCAACTATGTCAAGTTGACCAAAAAT 17485

Qy 14193 GCTGCTGCGCGGGAACCGCTGACGCCGACCGCTGCTCAGCCGGCAGCACCACACC 14252
          |||||
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...27 14:55:29 2005

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ID   AAV17876 standard; DNA; 38258 BP.
XX
AC   AAV17876;
XX
DT   23-JUL-1998  (first entry)
XX
DE   Cloned toxin gene sequence from Xenorhabdus strain NCIMB 40887.
XX
KW   Xenorhabdus; toxin; insecticidal; protection; Pieris brassicae; crop;
KW   Pieris rapae; Plutella xylostella; Lepidoptera; Diptera; animal; ss.
OS   Xenorhabdus sp.
XX
PN   WO9808388-A1.
XX
PD   05-MAR-1998.
XX
PF   27-AUG-1997;   97WO-GB002284.
XX
PR   29-AUG-1996;   96GB-00018083.
XX
PA   (UKAG-) UK MIN AGRIC FISHERIES & FOOD.
XX
PI   Jarrett P,  Ellis DJ,  Morgan JAW;
XX
DR   WPI; 1998-179074/16.
XX
PT   Orally active insecticidal composition, used for protection of crops or
PT   animals - contains pesticidal material from Xenorhabdus species
PT   optionally synergised with Bacillus thuringiensis toxin.
XX
PS   Claim 2; Fig 2; 46pp; English.
XX
CC   This is a toxin gene sequence cloned from a Xenorhabdus strain NCIMB
CC   40887. This has insecticidal activity and can be used in an insecticidal
CC   composition for oral delivery to an insect. The composition includes
CC   material encoded by Xenorhabdus strains NCIMB 40886 and 40887,
CC   particularly it contains Xenorhabdus cells or culture supernatant. It may
CC   also include active materials from other sources, especially Bacillus
CC   thuringiensis or delta-endotoxins, and is formulated with a carrier,
CC   especially an edible material for the pest. Pesticidal agents isolated
CC   from Xenorhabdus species, especially X. nematophilus have oral activity
CC   against Pieris brassicae or rapae, Plutella xylostella and are heat-
CC   stable at 55 deg. C. They are resistant to proteolysis by trypsin and
CC   proteinase K, and are inactivated by sodium dodecylsulphate or acetone,
CC   and by heating to 80 deg. C. The compositions are used to kill Diptera
CC   and Lepidoptera, particularly P. brassicae or rapae, P. xylostella and
CC   Culex quinquefaciatus, e.g. for crop or animal protection, also for
CC   vector control. The isolated pesticidal agent may be expressed in
CC   transformed plants to impart protection. Xenorhabdus materials show
CC   synergistic effects when formulated with Bacillus thuringiensis toxins
XX
SQ   Sequence 38258 BP; 10486 A; 8248 C; 8871 G; 10630 T; 0 U; 23 Other;

Query Match             6.7%;  Score 1260.8;  DB 2;  Length 38258;
Best Local Similarity   52.0%;           Pred. No. 1.1e-288;
Matches 3921;  Conservative    0;  Mismatches 3082;  Indels 541;  Gaps 27;
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(sequence alignment omitted)

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      Copyright (c) 1993 - 2005 Compugen Ltd.

OM nucleic - nucleic search, using sw model

Run on:      January 26, 2005, 06:14:03 ; Search time 1470 Seconds
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Searched:      824507 seqs, 355394441 residues

Total number of hits satisfying chosen parameters:     1649014

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
                 Maximum Match 100%
                 Listing first 45 summaries

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        Pred. No. is the number of results predicted by chance to have a
        score greater than or equal to the score of the result being printed,
        and is derived by analysis of the total score distribution.
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SUMMARIES

Result No.	Score	% Query Match	Length	DB	Length	ID	Description
1	2368.8	12.5		3	37948	US-09-251-645-11	Sequence 11, Appl
2	1108.8	5.9		4	4431	US-09-817-514A-3	Sequence 3, Appli
3	969.8	5.1		4	4458	US-08-851-567B-31	Sequence 31, Appl
4	903.4	4.8		4	6055	US-08-851-567B-25	Sequence 25, Appl
5	848.8	4.5		4	7551	US-08-851-567B-46	Sequence 46, Appl
6	848.8	4.5		4	7551	US-09-637-048C-1	Sequence 1, Appli
7	848.8	4.5		4	7551	US-09-817-514A-1	Sequence 1, Appli
8	848.8	4.3		4	7577	US-10-435-835-1	Sequence 1, Appli
9	815.2	4.3		4	7577	US-09-637-048C-3	Sequence 3, Appli
10	815.2	4.3		4	7577	US-10-435-835-3	Sequence 3, Appli
11	815.2	4.3		4	7621	US-09-637-048C-6	Sequence 6, Appli
12	815.2	4.3		4	7621	US-10-435-835-6	Sequence 6, Appli
13	781.2	4.1		4	7512	US-09-817-514A-7	Sequence 7, Appli
14	781.2	4.1		4	7515	US-08-851-567B-11	Sequence 11, Appl
15	781.2	4.1		4	7515	US-09-637-048C-2	Sequence 2, Appli
16	781.2	4.1		4	7515	US-10-435-835-2	Sequence 2, Appli
17	748.6	4.0		4	7541	US-09-637-048C-4	Sequence 4, Appli
18	748.6	4.0		4	7541	US-10-435-835-4	Sequence 4, Appli
19	725	3.8		4	3132	US-08-851-567B-60	Sequence 60, Appl
20	629.4	3.3		4	2745	US-09-817-514A-5	Sequence 5, Appli
21	608.2	3.2		4	1740	US-08-851-567B-50	Sequence 50, Appl
22	579.4	3.1		4	1722	US-08-851-567B-54	Sequence 54, Appl
23	439.2	2.3		4	5547	US-08-851-567B-48	Sequence 48, Appl
24	388	2.0		4	5532	US-08-851-567B-52	Sequence 52, Appl
25	277.4	1.5		4	2557	US-08-851-567B-36	Sequence 36, Appl
26	260	1.4		4	4832	US-08-851-567B-58	Sequence 58, Appl
27	173.4	0.9		4	1689	US-08-851-567B-29	Sequence 29, Appl
28	95.2	0.5			1881	US-08-851-567B-27	Sequence 27, Appl
29	67.2	0.4			501	US-09-543-681A-3481	Sequence 3481, Ap
30	65	0.3			501	US-09-543-681A-1125	Sequence 1125, Ap
31	62.2	0.3			658	US-08-998-416-595	Sequence 595, App
32	57.4	0.3	c	7218	US-08-232-463-14	Sequence 14, Appl
33	54.8	0.3	c	1141	US-09-806-708B-22	Sequence 22, Appl
34	54.6	0.3		1141	US-09-806-708B-22	Sequence 22, Appl
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36	52.2	0.3		5562	US-10-204-708-63	Sequence 63, Appli
37	52.2	0.3	c	47981	US-09-679-279-1	Sequence 1, Appli
38	51.6	0.3		20674	US-09-641-636-651	Sequence 651, App
39	51.6	0.3		20674	US-10-170-097-651	Sequence 651, App
40	51.2	0.3	c	447	US-09-248-796A-7484	Sequence 7484, Ap
41	50.6	0.3		11049	US-10-204-708-24	Sequence 24, Appl
42	50.4	0.3		8961	US-10-204-708-80	Sequence 80, Appl
43	50.4	0.3		38584	US-09-453-702B-50	Sequence 50, Appl
44	50.2	0.3		5455	US-10-204-708-33	Sequence 33, Appl
45	50.2	0.3		10467	US-10-204-708-2	Sequence 2, Appli

ALIGNMENTS

```
RESULT 1
US-09-251-645-11
; Sequence 11, Application US/09251645
; Patent No. 6281413
; GENERAL INFORMATION:
;   APPLICANT: Kramer, Vance C.
;   APPLICANT: Morgan, Michael K.
;   APPLICANT: Anderson, Arne R.
;   APPLICANT: Hart, Hope
;   APPLICANT: Warren, Gregory W.
;   APPLICANT: Dunn, Martha
;   APPLICANT: Chen, Jeng S.
;   TITLE OF INVENTION: NOVEL INSECTICIDAL TOXINS FROM PHOTORHABDUS LUMINESCENS
;   TITLE OF INVENTION: AND NUCLEIC ACID SEQUENCES CODING THEREFOR
;   FILE REFERENCE: CGC1963/A
;   CURRENT APPLICATION NUMBER: US/09/251,645
;   CURRENT FILING DATE: 1999-02-17
;   NUMBER OF SEQ ID NOS: 22
;   SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 11
;   LENGTH: 37948
;   TYPE: DNA
;   ORGANISM: Photorhabdus luminescens
;   FEATURE:
;   NAME/KEY: CDS
;   LOCATION: (15171)..(18035)
;   OTHER INFORMATION: orf5
;   FEATURE:
;   NAME/KEY: CDS
;   LOCATION: (23768)..(31336)
;   OTHER INFORMATION: hph2
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;   NAME/KEY: CDS
;   LOCATION: (31393)..(35838)
;   OTHER INFORMATION: orf2
US-09-251-645-11

Query Match             12.5%;  Score 2368.8;  DB 3;  Length 37948;
Best Local Similarity   54.0%;  Pred. No. 0;
Matches 6358;  Conservative 0;  Mismatches 4747;  Indels 671;  Gaps 47;

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          |  || |  || | | | ||||| | | |  ||| ||| |||| || ||  |   |||  |
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Qy   5411 ATAGAACTCAGCCGCCATGCGCAGAGGTGAGGGGGCGGTCAGTTTTTCACTGACTGGGATACG 5470
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Qy 9690 AGGGGCCGGATGGTGCGGACCCTGAGTATTCCCTTGCCGGTTAGCCCCGGTCGGGGTTA 9749

This page contains a nucleotide sequence alignment (Db vs Qy) printed in a rotated, two-panel layout. The alignment consists of paired DNA sequence rows labeled "Db" (Database) and "Qy" (Query) with flanking coordinate positions.

Right panel (coordinate ranges shown at start and end of each row):

Label	Start	End
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Qy	10815	10874
Db	11174	11233
Qy	10875	10934
Db	11234	11293
Qy	10935	10994
Db	11294	11353
Qy	10995	11054
Db	11354	11413
Qy	11055	11114
Db	11414	11473
Qy	11115	11174
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Qy	11175	11234
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Qy	11235	11294
Db	11594	11653
Qy	11295	11354
Db	11654	11713
Qy	11355	11414
Db	11714	11773
Qy	11415	11474
Db	11774	11833
Qy	11475	11534
Db	11834	11893
Qy	11535	11594
Db	11894	11953
Qy	11595	11654
Db	11954	12013
Qy	11655	11714
Db	12014	12073
Qy	11715	11774
Db	12074	12133
Qy	11775	11834
Db	12134	12193
Qy	11835	11894
Db	12194	12253

Left panel (coordinate positions shown at start and end of each row):

Label	Start	End
Db	10058	10117
Qy	9750	9809
Db	10118	10177
Qy	9810	9869
Db	10178	10237
Qy	9870	9929
Db	10238	10280
Qy	9930	9989
Db	10281	10339
Qy	9990	10049
Db	10340	10399
Qy	10050	10097
Db	10400	10459
Qy	10098	10157
Db	10460	10519
Qy	10158	10217
Db	10520	10579
Qy	10218	10277
Db	10580	10639
Qy	10278	10337
Db	10640	10699
Qy	10338	10394
Db	10700	10759
Qy	10395	10454
Db	10760	10819
Qy	10455	10514
Db	10820	10873
Qy	10515	10574
Db	10874	10933
Qy	10934	10993
Db	10575	10634
Qy	10635	10694
Db	10994	11053
Qy	10695	10754
Db	11054	11113
Qy	10755	10814

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Qy  11895  TCTGGTCAGCGACGTGCTTTATCGCCACGGCGTCTGGGACGCGGCAGGAACGGCGAGTTTCG  11954
           ||||| |||||||||||||||||||||||||||||||||  |||||||||| ||||| |||||
Db  12254  ATTAGTCACATACACGTTATGCACATGGCGCCTGGGATGGACGTGAGCGAGCGAATTTCG  12313

Qy  11955  GGGGTTTGGTTTGTTGTTGAGATCAGGGATACCGTTGGC------------------  11996
           |||||||||||||                               ||||||
Db  12314  CGGATTTGGTTATGTGTTGAACAGAAGACAGCCATCAACTGCCCAAGGCAGTGCGCCAGA  12373

Qy  11997  -------------------------------------CTTGCGAGCAAGGCCGGTTACCGGCAATCCGGATA  12373
                                                |||||||||||||||||||||||||||||
Db  12374  ATGCACACCTGACTGACCCAAGGCAACGCGCCGCCTGACTCACATCACCCGCCTGAC  12433

Qy  11997  ------------------------------------------  11996
Db  12434  CCAAGGCAACGCCTCACACCACCTGCGATGACCCAAAGCAACGCGCCTGAACT  12493

Qy  11997  -----------------------AAGCCA  12002
                                  ||||||
Db  12494  CACATCACCCGCGCTGACCCAAGGCAACGCCCAGAATTCACATCACCCGCGCTGGCCCA  12553

Qy  12003  GGGTACGGCGACGGAACTGAGTATGCCTTCTGTGAGCCGGAACTGGTATGCCACCGGGGT  12062
           |||||         |||| || ||||||||||
Db  12554  AGGGCAAATACACGCTCACTTGGGATGCAAACTATTGCGTCGTCACACAAACCCGGATGC  12613

Qy  12063  ACCGGCAGTAGACGAGCGTCTGCCGGAGACGTATTGCCGAGAGGATGAGCAGACATATCC  12122
           |||||                        |||||||||||||||||||
Db  12614  ACCCATGATAAACACATTATCGAACGAGTATTGGCATGGTGAGCAGCGTTTTGC  12673

Qy  12123  CGAATTCGGCGACCCGTTCACTGTCCGTTCCGTTCAGGAGAGGATGAGCAGCAGATATACTTCCGG-  12181
           ||||||||||||||||||         ||| ||||
Db  12674  CGGTTTTCACCACGCTTTACGACCTGGCAAGAATGGTCAAGATATTCTGCTCACACCGGA  12733

Qy  12182  --ACGACGCAAGAGACATTTCTGTTGCACATGAAAGGCATCCTGCTGTGCGCAGTGA  12239
             ||||||||           |||  |||||||||||||||||||
Db  12734  AAATGATAAACAGTCAGTACTGCCTAAACCGGCACTGCAACTGCTCACGCACTGA  12793

Qy  12240  GTTATACGGTGCCGATGGCAGCAGCCAGTGCGATATCCCTTACAGGGTCACTGAGTCTCG  12299
           |||  |||||||                 ||||||||||||||||||||||
Db  12794  ACTGTACGGCGAGGATGCGCAGTACACAGAGAAAAAAATCCCTACACAGTCACTGAATTCG  12853

Qy  12300  CCCGCCAGTA-----CGGCTCAGTTGGGAGGCGAATGGAGACTACCCGGTGTGTCGCCGATGGG  12356
           |||||||||        ||| |||     |||||||||||||||||
Db  12854  CCCACAGTGACGTCGGTTACAGCATACGGCCGATAGCCGATACCGGATACCTTGTCGTTGGTCATCTGT  12913

Qy  12357  CGCGGAAAGCCGTACGTCAGTTTATGAACGGTACCACAATGATCCTCAATGCCAACAGCA  12416
           || ||||||||||||||||||||||||||||||||||||||||||
Db  12914  AGTTGAAAGCCGAACTATCGGAACTGCGATATACGAACGTATCGCCCAGCATCCTCAATGCAGCCCAAAA  12973

Qy  12417  GGGGGTACTCCTCAGTGATGAATACGGTTTCCCACTGCGTCAGGTCAGTGTCAATTATCC  12476
           |||| ||||||||||||||||||||||||||||||||||||
Db  12974  AGTTACGCGTCATCCAGCGATCATTACGGACGTATCGCCGATCCTCCAGCCAAGCAGCCAAAA  13033

Qy  12477  ACGACGCGCCTCCGTCGGCGGGACAACATCCATATCCGTATCCGATCCTGATAAGTTATTTGC  12536
           ||||||||||        |||||| |||||||||||||||||
Db  13034  ACGCCGCGCCAGCAACCGGCCAAGCAGTCCGTATCCGTATCCGATCTGATAAGTTATTTGC  13093

Qy  12537  CAACAGTTATGACGAGCAGCAGCGGCAGATATTACCGCTGCAACAGAGCAGTGCACA  12596
           ||||||             |||||||||||||||||||||||||||||
Db  13094  TAACAGCTATGATGACCAGCCAGTAACCACCGGCACCTTCAGTTGGTTGGCA  13153

Qy  12597  TCACCTTGTTTCACTGTCTGAGGGCATTGGTTGTTGTTGGGATTACCGGATAGTACCCGGGA  12656
           ||||||     |||| ||||||||||||||||||||||||||||||||
Db  13154  TCATCT-----GACCGACAATACCATTCTGATGTTAGGATTACCGGATAGTCAGTTCAGTTGCAG  13207

Qy  12657  CGATGTATTCACGCTACTCTGCGACAACGCGGGTCACGCTGGGTCTGACGCCGCTCGGC  12716
           |||||||||||||||||||||  ||||||||||||
Db  13208  CGATATCTTTGCTTATAGCGCTGAACATGTCCCTACTGTGTCTAAAATCTGGAAAATCCT  13267

Qy  12717  GTTGGCGCCCGAAAGCCTGGTCTCTCGGATAGTCAGTTGGGTACGGTCGGTGGCGGTCAGCAGCA  12776
           ||| ||||||||||||||||||||||||||||||||||
Db  13268  AAATGATAAAAATAGTCTGATTGCGGAGAATAAAACCTCGTGAATACCTCGGCCAGCAAAA  13327

Qy  12717  GTTGGCGCCCGAAAGCCTGGTCTCTCGGATAGTCAGTTGGGTACGGTCGGTGGCGGTCAGCAGCA  12776
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Qy  12777  AGTCTGGTATCTGATTCACAAGACGTTGCCACGGTCGCTGCTCGCCACTCCCCCCAA  12836
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  13328  AACCGTTTATACCGACGGGCAAATGCAAATGCCATCGAAACGGCCAACACGACAAGCGCT  13387

Qy  12837  GGTAGCTTTTATGGAACGGCCGTGCTGGATGAGGGTATGGTCAGTTCACTGGCTGCCTA  12896
           |||||||                      ||||||||||||||||||||
Db  13388  GATTGCCTTCACCGACAGACACAGTATTTAATCAATCCACACTATCAGCGGTTGATGGGAG  13447

Qy  12897  CATTGTGATGAACAT-----------CTCGAGCAAGGCCGGTTACCGGCAATCCGGATA  12944
           ||||||||||||                |||||||||||||||||||||||||
Db  13448  TATCTCATCTGCTCAATTGTCAACGACGCTGGACAAGGCCGGATACCAGCACAGATTA  13507

Qy  12945  CCTTTCCCTGCGAGGCAGGGAAGCAGAACAGGCATTGTGACCCAGTGTCAGGGGATATGT  13004
           || ||||||||||||||||||||             ||||||||||
Db  13508  TCTATTCCCGGCACTGGACTGGCGTCGTGGCTGGCTATAC  13561

Qy  13005  TACCTATGCCGGGCCGCAGAGCATTTCTGGCTACCGCTATCCTTTCGGGACAGTATGTTGAC  13064
           ||||||||||||||||||||||||||||||||||||||||||||||
Db  13562  TGATTACGGCACAGCCGACACAGTTCTGGCCGCCGCGAAAAACAGACAACACTCAACTCAC  13621

Qy  13065  CGGCCCAGTTACCGTGACGCCTGACGCCGACTGGTCATCACGCCGCTGACGAGGATGC  13124
           |||||                     ||||||||||||||| |||||||
Db  13622  GGGCAAAATCACGCTCACTTGGGATGCAAACTATTGCGTCGTCACACAAACCCGGATGC  13681

Qy  13125  CGCAGGGATTGTCACCACCAGCGACTGGCCAGATGACCCAGCCAGTACGCCCGTTCGGGTGAC  13184
           |||                       ||| ||||||||||||||||||
Db  13682  GGCTGGACTGACACAACCTGACTGGCGTTTTCTGACCCCCCGTTCAACTCAC  13741

Qy  13185  GGACCCCAATGATAATCTGCAGTCCGTCACTCTGGATGTCGCACGGGTGACCACCCT  13244
           ||||||||                     ||||||||||| |||||||||
Db  13742  GGATATCAACGACACAATCAGCACTTACCACGCTGGGCGCGCCAATCACACT  13801

Qy  13245  GCGATTCTCGGGCGACGAGAATGGTATTGCCACCGGTTACAGT--------GATGCCAC  13295
           ||||                    |||||     ||||||||        ||||||
Db  13802  GCGCTTTTGGGGAACCGAAAACGGTAAGATGACTGGTTATTCTTCACCGGAAAAAATATC  13861

Qy  13296  GTTGTCCGTTCCGGACGGCGCAGCAGCCGATATCCCTTACAGGGTCACTGAGTCTCG  13355
           |||                      |||||||||||||||||||||||
Db  13862  GTTTTCCCACCATCTGATGTTGACGCCGCGGATTAACAAGGCCAATCCCTGTGAGC  13921

Qy  13356  ACAGTGTCTGGTGTATGTCACGGACAGTTGG-------------------  13386
           |||||||                |||||||
Db  13922  ACAGTGTCAGGTCTACGCACCGGATGGATGCCCATATTAAAGAAAAACCCTCAATAA  13981

Qy  13387  --------------------------------------------  13386
Db  13982  CCTGGCAGAGCAAGAGCGGAGAAAGAGTTATATAACACCCGAATCATCACCGAAGACGACG  14041

Qy  13387  --------------------------------------------  13386
Db  14042  CATCTGTACCCTAGCTGACACAATGACCGTTTCAATGCCAAAGTGCAGTCAGTCACCCAGATTATCC  14101

Qy  13387  ----GGAGATGACGAACGGACAGTCCCGTTTACCCCGTTTACGGCGGTACCGATCG  13442
               ||||         |||||| |||||||||||||||||
Db  14102  CAATCTGTCAAACGGCAGTCCCGTTTACCCTTCATAGCCTCACATTGACTACGGATCG  14161

Qy  13443  CTATGACAGTGATACCGGACAGGTCGGCAACAGTGACATTCAGTGACGTTGG  13502
           ||||||||||||||||||||||||||||   |||||||||||
Db  14162  TTATGACCGGCGATCTTAAGCAACAGATTCGTCAACAGTAGTAATGTCAGTGGCTTTGG  14221

Qy  13503  GGCTGAGTTGCAATCGGCATTGGTTGTTGTTGGGCAACGGCAACCGCCTGGCAACGAGGACGCGA  13562
           |||||||||||||||||       ||| |||||||||||||||||||
Db  14222  CCGTTTACTGACCTGTACGACACGGCAGCATGTAACCGGCAAGGCGGAAGCCGCTGGCAACGTAACCAAGA  14281

Qy  13563  CGCAAACTGGTGACGGCCAGTGACGATTGGCGGGTTCCGCTGTAGCAACACCT  13622
           |||||||||||                      ||||||||||||||
Db  14282  CGGCGCTCTGGTGACAAAAATGGA--------AGATACCAAAACGCGCTG  14323

Qy  13623  GCGGGTCACCGGAGGGCGGCGAGTATGACAATAAAGGTCTGCCTGTTTATCAGCC  13682
           ||||||||||||||||||||||||||||||||||||||||||||
Db  14324  GCGGGTTACGGACGGACGCACTGAATATGACAATATGACAACCGATACGGACCTATCAACC  14383

Qy  13683  GTATTTTCTGGACAGTTGGCAATATGTCAGTGATGAGACAGTGCCCGCCCAG------GACCT  13736
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Right column:

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Db  15388 GGCAGTATGATTGACCGGTAATATTTTGTGTACAGAAAGCGTCGGTGGTCGCCACTG 15447
Qy  14814 TGGAACTGAGCGATGCCGCGGGCGGGGGCGTTTCTGGCCGTTCACCGGGCGGAAG 14873
Db  15448 TCACCTTGAATGATATTGAAGGCCGTCCGGTACTGACAGTAACTGCAACAGG------- 15499
Db  14874 ACGCGGTCACCCGCAATGAGAAGCATACCTGCCGCGGCCGCCGTGAGCA 14933
Qy  15500 ----TGTCATCACAAACCGACAATATGAAATGAAACGTCTTCCCTACCCGTCGTGTCTG 15555
Qy  14934 TCACCGACCAGGTTACGGTGAAGCGCCCAAATTACGGAACGCTTCGTGTACGGTCGGCA 14993
Db  15556 TTACCGAACAAATACCAGAAAAAAAACATCCCGTATCACCGAACGCGGTGATGAGTCCG 15615
Db  14994 ATACGGATGCCGAGAGATTCTCAATCTGGCTGGCCAGTGTGTCAGTCATTACGATACCG 15053
Qy  15616 ATAGGCAGCAGAGAGAAAACCATAATCTTGCCGCCAGTGCGTGCCACTATGACACGG 15675
Qy  15054 CCGGACTGGTCGACAGCGGACGCATCCCCTGAGCCGGCGTCGCGTGCCACCGGGC 15113
Db  15676 CGGGAGTCACCCGATTAGAGTTGTCACTGACCGGTACGGTGTTTATCTCAATCCAGCC 15735
Db  15114 AGTTGCTGCCCGACGCGCGGGGGCCAACTGATGGTGAGGATGGTCGGAATG 15173
Qy  15736 AACTATTGAGCGACACTCAAGAGACTAGCTGACAGTGATAATGAAAACCGTCTGGCAAA 15795
Qy  15174 ACCTGCTGGGGAGCAGCGTTCTTCACCCAGACCCAGCGTGACGACGGCCGTCC 15233
Db  15796 ACATGCTGGCTGGTGATGACATCTCTACACACCCTGAGCGCCTTTGTGATGCCGCTTTAC 15855
Db  15234 TGAGCATCACCGATGCAAAAGTAATCTGCAGCGTGTCGCAATGATGATGTGGGCTGC 15293
Qy  15856 TCACTCAGACCGATGCGGAAGGACAGCATTCAGAGGACGTGGACGGCAGC 15915
Qy  15294 TATCGGGCAGTTGGTTGGTGACGCTGAAGACGTGAAGACGGCAACGGCAGCGGAGAGC 15353
Db  15916 TAAAGGGGAGCTGGTTAACCTTAAAGACAACAAGTGGTTATCAGATCCCTGA 15975
Db  15354 CGTACTCGGCGCGCCGGAAAAAGTTGCGTGAAGACAACACGGCAACGGCAATGTCGT 15413
Qy  15976 CCTATTCCCGCGCGCGACAAAAAATTACGGGACGGAACAACCGCAATGTGTTATCACCGAAT 16035
Qy  15414 ATATTTACGACACAGCGCCTGAAAACACAGCGCCTGACGGGGATTAAAACCGGATCCGTCTGGGC 15473
Db  16036 ACAGTTATGAACCGGAAACCCAACAGCTTATCGTGTACCAAAACCACCGTCCGTCGAT- 16094
Db  15474 ACGTTGCCGGAGCAAAAGTGCTGCGAGGACCTGCGGCCTATACGTAGGCAACG 15533
Qy  16095 ------GCCAAAGTGTTGCAAGATCGAAGGAGGAAGAGACCCGCTTCTGCGCTTAACCAGAAGTGGTAC 16143
Qy  15534 TACTCAGCCGTCAATAACGATGCGAAGAGACCCGCTGGCTTCTGCGCTTAACCAGAAAGTGGTAC 15593
Db  16144 TCATCAGTATCCGTAATGACCGCAGCAGAGCCCACCGTCTGACCAGTCAGAAGTGCGCGC 16203
Db  15594 CGGAGAATACGTACATCTACATCTACGACAGCGCTGCTGATTATCGCGACATCACGGGTA 15653
Qy  16204 CGGAAAAACACTTATACCTACGATCCTTGTATCAGTTATTCCGCGCAACCGGCGCGGAGA 16263
Qy  15654 TGGCCAATGCGGCCAGGGCCAAGACTTACCATCCGCTACCGCC------CTCACCCTACCTTCTG 15713
Db  16264 TGGCGAATATAGTCAGCAAAGTAACAGTAACAACTTCCCTC 16317
Db  15714 ACAGCTGCCTCACCACCAATTACACGGCCACCTTACCCGGTTGGTGGCAACCTGA 15773
Qy  16318 ATAACAACACCTACACCCTACTTATACTTATGACCGTGCGGCGCAATTTGA 16377
Qy  15774 CGCAGATGCGCCACAGTGCCCCTGCCACGAACATAATTATACGACATCACGGGTA 15833
Db  16378 CTAAAATCCAGCACGTTCACCGGCGACGCAAACACTACACCACAAACATCACGGTTT 16437
Db  15834 GTGACCGCAGCAATCGCCGGGACACTGGCCGGTACTGAGCACGTTGGCCGACGTCGC 15893
Qy  16438 CTAACCGGAGCAATCGCCGGGACACTCTGACACTCAGCACTCAGCCCGCGCAAGTAGATG 16497
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Left column:

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Db  14384 CTATTTCCTCAAGCACGACTGGCAATACGTCAGTAATGACCAGTGCCCGGCGACAGAGAAGC 14443
Qy  13737 GTATGCCGACACGCACTTTACGATCCGATCCATTGGTCTATGATGTCGAGAGACGAGAATGA 13796
Db  14444 CTATGCAGATATACCCCATGGTCTATGATCCATTGGTCTATGATCAAGGTCACTACCGCAAA 14503
Db  13797 AGGTGAACGGCGACAGGTGCTGTATACCCCGTTGGTTGTGTCAGTGAAGACGAGAATGA 13856
Qy  14504 AGGCTGGTTCCGTCGAACCTTGTTCACTCCTTGGTTTACTGTCAATGAAGATGAAAATGA 14563
Qy  13857 TACCGTTGGGCTAAACGATCATCCTGACTGGGAAGGAGGGGGACCGGTGATGAGTCCG 13916
Db  14564 CACAGCT---ACTGAGGTGAACGTAAAGAAGAAGAGAATGTAAAGAAGGTAAAGAAGGTA 14619
Db  13917 TCGCCCCTGACAGGCGCGTGCCCTGATGGAGACAAAAGATGAAAATACACTATCAGGTTGCG 13976
Qy  14620 AAGATGTAAATTTGATCAATCCGCCGGTTGAGGGGCCTTTCCCATTGGCGTTACACCGTCGT 14679
Qy  13977 GCCGGTTGTGCTGACAGGTGTTATGGTTTGGGGGCTTTCCACTGACCGTGTTACACTGCGT 14036
Db  14680 G------TGAAACGTGTCATTCATAATGCGTCAGATACTCAACTTATGAGTTGTT 14730
Db  14037 TACCACGCGCAGATACTCAAGGCCGAACACGCCAGGCCGAACAGGAAAGGGCCGATCG 14096
Qy  14731 GATCATTGGTTTTAT--------TGCGGCTCTGGGGCGATTAGTAGTAAGGTACCTCATTG 14780
Qy  14097 TTGGCCCTCCTGGCAGCAGAAACCCGGAAAGAAAAGTGGGAGCAGCAACGACGACTGAC 14156
Db  14781 AT--------ATACAAAACAACAATGTAAAATGGAATTGGATCAAC----GTACTCTGTC 14828
Db  14157 ATGAACAAGGTGGCTATACATGCTGAAGAAGAACTGGCTGCCTGCGGTGACGCTGCCGCT 14216
Qy  14829 GATGCTCAGCCGCCACTGGTCTGAGATTGCGCGGCTATTGGCCGGCGAAGTTCTGGAT 14888
Qy  14217 GCAGCCCTATATGACTTTTGCGATTGCCGGCCTTTTCGCAGCTACCGGTACAGACCTCGGA 14276
Db  14889 GCCAGTCGTGAAACCCGCCGCCTTTCGCGCCAGCTACCGGCTATCGGATACAGACGACCTCGGA 14948
Db  14277 GCCAGTCGTGAAACCCGCCGCCTTTCGCGCCAGCTACCGGCTATCGGATACAGACGACCTCGGA 14336
Qy  14949 TGAACTGGATCTGGCGTCGGTCGCGCCCCTTTTGTTATGCATTATCGC------GATGATGAGGA 14998
Qy  14337 GGCCAACCCGGCGTTTGTTGTTGCGGCGAACTGTTCCGCCGCGTCCGCCAGGAGCGGGGAGAG 14396
Db  14999 AAGCAATAAGGCATTCCCACTGCCGCAAAAACCATCGTCTCCGGCAGTTAAACCGGGAA 15058
Db  14397 CTGGCAGCGTATGCTGCAGACGACCAGAGTGAAAATGGCGAGAATGGCGCGCCGCCGCCTATCAG 14456
Qy  15059 -----------ATATA 15094
Qy  14457 ATTACCTACTACAACTATTGTAAGAAAACGA------------ 14516
Db  15095 AACAACGAGGTAAAT---CATGAAAAACATCGATCCTAAACTTTATCAAAAGACCCCTGT 15154
Db  14517 TTTTCGGATTAATAATTAACAGGAGATCACACATGGAGACTCCTTGTTCAGTCAGACCCCGT 14576
Qy  15155 AACAACGAGGTAAAT---CATGAAAAACATCGATCCTAAACTTTATCAAAAGACCCCTGT 15211
Qy  14577 CGGTTCACAAAGCCGACCCGCCCCGGTTACACGCCCGGGCCGACCGGTTACCGCCATC 14636
Db  15212 C-GTCAACATCTCACGATAACCGAGTCTCAACGGTCTAACAT--CGACTTTTCACCGTA 15267
Db  14637 CGGATACACCGGAGGAGACGGCGGATACCGGTATCCACCTGCCATCAGACGATGAGCGCGCA 14696
Qy  15268 CCACCGCGAAGCGGATACCGGTATTACCTGCCATCAATATGACTCCCTTGGGC 15327
Qy  14697 GCTTGTGTCACAAAGGCCGACCCGCCGGTTACACGCCCGTCTGACA---AATTCACGT 14753
Db  15328 ACCTAAGCCAAAGCACCACCGGTTACCGGCTGGCGCCGCCGGTACGTCC 15387
Db  14754 ACCTGAATAGCCTGACCGGACCGCAGACTGCTGACGCTGGTACTCGCAGTCTCGGTACGTCC 14813
Qy  14813 CTAACCGGAGCAATCGCCGGGACACTCTGACACTCAGCCCGCGCAAGTAGATG
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Qy   15894  TGCTGTTCAGTGCAGGAGGTCACCAGAAGCAGCCGGGCAAGCACTGTGTGA  15953
                 ||||| || ||||| ||||||||||||||||||||||||| |||||||||||
Db   16498  CTTTATTTGATGCAGGCGGACATCAGAACACGTTGATATCAGGACAAAACCTGAACTGGA  16557

Qy   15954  CGCCACGTGAGAACTGCAAAAGGTGACACCGGTGGTGCCGGTGATGGGGGGC---GGACG  16010
                 ||||  |||||  |||||
Db   16558  ATACACGCGGTGAACTACACACATGTGACATAGGTGGTGAAACGGGACAAGGGCGCCAATGATG  16617

Qy   16011  ACAGCGAAAGCTATCGGTATGATGCGGCAGTGCAGTCGGGCGTATTATCAAAAACCGCACGCGCGC  16070
                 ||||  ||| ||| |||
Db   16618  ATCGGGAATGTATCGTATAGTAGTGCTATAGTGACGGGAGGATATTAAAAATCAATGAACAGC  16677

Qy   16071  AAACTGGCAACAACAACGTTCAGACACAGCCGGCCAGTGTGTACGTTATACGGTGGGCGAGGCTG  16130
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Db   16678  AGACCAGCAGCAACTCTCAAACACCAGAGAATAACTTATTTGCCGAGCTTAGAGACTTCGTC  16737

Qy   16131  TCATGGCAAATGGCGTGACGGAAAAGAAGCCTGCAGGTTATTACGGTGGGCGAGGCTG  16190
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Db   16738  TAACACAAAACAGCAGCGATCACAACCGAGATTTGCAAGTTATCACAGTAGGAGAAGCCG  16797

Qy   16191  GGCGGGCACAAGTGCGCGTATTGCACTGGGAGATCGGCAAGCCGGATGACCTGCGATGAGG  16250
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Db   16798  GTCGGGCACAGGTACGAGTATTACATTGGGATAGCGGTCAACCGGAAGATATCGACAATA  16857

Qy   16251  ACTCGGTGCGTTACAGTTACGAGTACCTGGTGGGCAGCAGCCAGCTGGAGCTCGACAGAG  16310
                 ||||  |||| ||| ||
Db   16858  ATCAGCTACGTTATAGCTACGATAAATCTTATCCGGTTCAACTTGAATTAGACAGCA  16917

Qy   16311  AGGGTTACCTTATCAGTGAGGAGAGTTCACCCGTATGCGAACGGCTGTGTTCTGACGG  16370
                 ||  ||| || ||
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Qy   16371  CGCAAGTGAGGTTGAGCGTGACTACAAAACTATCCGATAACTATCCGGCCAAGGAGCCGTGACG  16430
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Db   16978  CAAGGAAGCCGACAGAGGCCAGTTATAAAACCATCCGTATTCAGTTAAAGAGGGGGGATG  17037

Qy   16431  CGACGGGCGCTGGAATTATTACGGTTATGTATCGGTATTACCAGCCATGGCCATGGCGTGGCTCT  16490
                 |||  |||  || ||
Db   17038  CCACCGGACTATATATTATTACGGTTACCGATATTATCAGCCTTGGGTAGGACGATGGTTAA  17097

Qy   16491  CCACCGACCCGCAGCCACCGTGACGGCCACGGCTGAACCTGTTCCCGATGGTGCGGAATAATC  16550
                 ||||  ||||  || ||
Db   17098  GTGCCGATCCGGCAGGAACCAGTAGATGGGTGAATTTATATCGGATGGTAAGGAATAATC  17157

Qy   16551  CCGTCACGCTGTTGA  16566
                 ||||||  ||| ||
Db   17158  CGGTTACTCTGCTTGA  17173
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RESULT 2
US-09-817-514A-3
; Sequence 3, Application US/09817514A
; Patent No. 6639129
; GENERAL INFORMATION:
; APPLICANT: ffrench-Constant, Richard
; APPLICANT: Bowen, David
; APPLICANT: Rocheleau, Thomas
; APPLICANT: Waterfield, Nicholas
; TITLE OF INVENTION: DNA SEQUENCES FROM PHOTORHABDUS LUMINESCENS
; FILE REFERENCE: 61645
; CURRENT APPLICATION NUMBER: US/09/817,514A
; CURRENT FILING DATE: 2000-03-26
; PRIOR APPLICATION NUMBER: US 60/191806
; PRIOR FILING DATE: 2000-03-24
; NUMBER OF SEQ ID NOS: 8
; SOFTWARE: PatentIn version 3.0
;
; SEQ ID NO 3
; LENGTH: 4431
; TYPE: DNA
; ORGANISM: Photorhabdus luminescens
; FEATURE:
; NAME/KEY: CDS

; LOCATION: (1)..(4431)
US-09-817-514A-3

Query Match   5.9%;   Score 1108.8;   DB 4;   Length 4431;
Best Local Similarity   56.0%;   Pred. No. 3 6e-298;
Matches 2493;   Conservative   0;   Mismatches 1732;   Indels   225;   Gaps   12;

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Qy   9598  ATGCAAAATCATCAAGACATGGCCATTACTGCCCCACGTGCCCCACGTTGCCTTCCGGGGGGCGGGTGCG  9657
                ||||||||||||||||||||||||||||||||||||||||||||||||||
Db      1  ATGCAGAATTCACAAACATTCAGTGTTACCGAGCTGTGTCATTACCCAAAGGGCGGGCGGCCGGCT  60

Qy   9658  GTCACCGGGTCAAGGGTGATATCGGCGGCCAGCAGCGCCGGCAGGCCGGAGTGTGCGGCCGGACCCTGAGT  9717
                ||||||||||||||||||||||||||||||||||||
Db     61  ATTACCGGTATGGGTGAAGCATTAACACCAGCCGGCGGCGGCGATGGCGCCGGCCTTATCC  120

Qy   9718  ATTCCTTGCCGGTTAGCCCGGTTAGCCCGGTTAGCCCGGTATCGGGGCACTCAATTATCAC  9777
                ||||||||||||||||||||||||||||||||||||
Db    121  CTGCCATTACCCATTTCCGCGGTCGGTTGGGACTCGGCGCGCGTCATGGCAATTCGT  180

Qy   9778  AGCCGGTGGGGAACGGCCCTTTGGGCATTGGCTGGGTATCGGCGGGTATCGCGGTGCTGTGTCAG  9837
                ||||||||||||||||||||||||||||||||||||
Db    181  AGTGGAACCGGTAACAGCCCATTTGGTCTCGGTTGGGACTCGGCGCGCGTCATGGCAATTCGT  240

Qy   9838  CGTCGTACGGTCCAACGCAACCTACCGACTCACCTACCGACGATGATGAATTCACCGGTCCCGGAC  9897
                ||||||||||||||||||||||||||||||||||||
Db    241  CGTCGCACCAGTACGGGCGTACCGGTACCGATAACGATGAAACCGATACTTTTCTGGGGCCGGAA  300

Qy   9898  GGTCAGGTGCTGTCGCTGCCCGCACTCGAGTAGCATTAAATGAGGCAGGTCAAGCTGATATCCGCAGTGAATCC  9957
                ||||||||||||||||||||||||||||||||||||
Db    301  GGTGAAGTGTTGGTCGTAGCATTAAATGAGGCAGGTCAAGCTGATATCCGCAGTGAATCC  360

Qy   9958  TCACTACTGGGATAAACCCAGGCGGAAGCTTCAAGTTCAGGTTCAACGTTCACCGTTACGTACG  10017
                ||||||||||||||||||||||||||||||||||||
Db    361  TCATTGCAGGGCCATCAATTTGGGTGCGACCTTCACCGTTACCTGTTATCGTCCCGCCTA  420

Qy  10018  GAGGGTAGTCTCAGCCGCGTTGGCTGCCGCGACGAGAGAAACGGAATTT  10077
                ||||||||||||||||||||||||||
Db    421  GAAAGCCACTTTAACCGGTTGGAATACTGGCAACCCCAAACAACCGGCGCAACCGATTTC  480

Qy  10078  TGGGGTTGTTATATACCCCTGACGGACAGGTGGCTTCGTCTGGGCGCGGAAATGGCAGGCTCGC  10137
                |||||||||||||||||||||||||||
Db    481  TGGCTGAGTATACAGACCCCGACGGACAGCAGTCCATTTACTGGACAGATGGTAATAATC  540

Qy  10138  ATCAGCAACCCCACAGCCCACCACGCGGCGGTTGGCTGATGAGTCCTCGGTATCA  10197
                ||||||||||||||||||||||||||
Db    541  ATCAGCAATCCACTCAATGTTAACCAAACAGCCAATACCGTGCGGAAGATGAGCGTTATCGATATCA  600

Qy  10198  CTTACCGGCAACAGATGTATTACCAATACCGTGCGGAAGATGAGCAGCAGGTTGTGACGAG  10257
                ||||||||||||||||||||||||||
Db    601  TCCCACAGCGAACAGATTTATTATCAATATCGCGCTGCCCAGTTGTGAAACC  660

Qy  10258  GCGGAGCGGCGACGCGCCACCCGGCAGGCCCCAGGCCCCCAGGCCCCAACGTATCCGGTGCGCGTCGGTAT  10317
                ||||||||||||||||||||||||||
Db    661  GACGAGCTAGCAGCCCCAACCGGCGTCACCGCTACCGCTCCAGCGTACTTCAGCAGTACATTAC  720

Qy  10318  GGTAACCGGTCAGGCGGCTCGGACGCTACCGGCGCT---GGTGTCGACACCATCAATGGAT  10374
                |||||||||||||||||||||||||||||
Db    721  GGGAACCTGACCCGCCAGCGACGTTTTCCTACACTAAACGGAGATGACCCACTTAAATCT  780

Qy  10375  AGCTGGCTGTGTTTATCCTGGTGTTGATAATGGTGATTGAGCCTAGCTTCCGGTCTGTCTGAAGCG  10434
                ||||||||||||||||||||||||||
Db    781  GGCTGGGATGTTCTGTTTAGTATTTGACTACGGTGAGCGGCAAAAACAGTTATCTGAAATG  840

Qy  10435  CCGGCCTGCAAACACCAGGAAGTGGGGAGTGGCGTGTCGTCAGGATTGTTTTCCGGG  10494
                ||||||||||||||||||||||||||
Db    841  CCGGCTGTTTAAAGCCACAGGCA------ATTGGCTTTGCCGAAAAGAACCGTTTTTTCCCGT  894

Qy  10495  TATGAGTTTGGTTTAACCTGCCGACTGCGCCTGCCGTCAGGTTTTGATGTTCCAT  10554
                ||||||||||||||||||||||||||
Db    895  TATGAGTACGGTTTTGATTGCCGTACTCGCCGTTATGCCGCCAAATACTGATGTTTCAC  954

Qy  10555  TACCTAGGTGTTCGGGGAGTTCGGGGAGTTCGGGAGGCGAATGATGCGCCAGCAGTTCGGCG  10614
                |||||||||||||||||||||
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